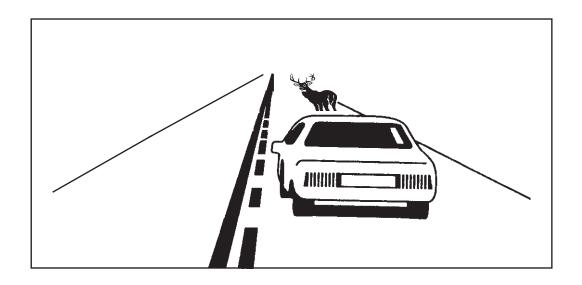
MISSOURI STATE HIGHWAY PATROL



ANALYSIS OF DEER INVOLVEMENT IN MISSOURI TRAFFIC CRASHES 2008

Prepared By
Public Information and Education Division
and the
Missouri Statistical Analysis Center

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INTRODUCTION

In recent years, Missouri traffic safety authorities have expressed concern over (1) animal-vehicle crashes involving deer and (2) crashes caused by drivers avoiding deer on roadways. This is one in a series of reports designed to identify the seriousness and characteristics of deer-involved traffic crashes on Missouri's public roadways.

1. METHODOLOGY

Perviously, data from the National Highway Traffic Safety Administration (NHTSA), Fatality Analysis Reporting System (FARS) were used to analyze deer-involved fatal crashes in the State. Due to the delay in obtaining FARS data, analysis of those fatal crashes where drivers made evasive maneuvers to avoid deer and no deer were struck but their evasive maneuvers contributed to the cause of the traffic crash will no longer be available in this report. That data may still be obtained from NHTSA.

Data from the Missouri Statewide Traffic Accident Records System (STARS) will be used for this report. Using STARS data, all 2008 Missouri traffic crashes where a deer was struck as part of the first harmful event were identified and analyzed (not just fatal crashes). However, this information source was limited in that it did not contain data identifying traffic crashes involving a deer avoidance maneuver where the animal was **not** struck. As a result, analysis could not be conducted on the deer avoidance maneuver problem associated with all Missouri traffic crashes.

2. DISCUSSION OF FINDINGS

The following is a discussion of findings obtained from an analysis of Missouri's 2008 traffic crashes related to deer involvement:

- In 2008, Missouri had 3,603 traffic crashes where deer-vehicle strikes occurred in the first harmful event. One deer strike occurred every 2.4 hours in the State.
- In 2008, 2 people were killed and 336 injured in these types of crashes. One person was killed or injured every 1.1 days.
- Of all deer strike traffic crashes, 28.0% occurred in an urban area and 72.0% occurred in a rural area of the State. Even though rural areas seem to be overrepresented, the eight highest ranking Missouri counties experiencing this problem are associated with major metropolitan areas. These include: Jackson, St. Louis, Platte, Clay, Jefferson, Boone, St. Charles, and Franklin. Deer strike traffic crashes in these counties account for 36.7% of the total.
- Four out of five, or 82.2%, of the 2008 deer strike crashes occurred on Statemaintained roadways. The greatest proportion occurred on State Numbered Routes (26.8%), followed closely by U.S. Highways (25.9%) and State Lettered Routes (16.5%). An additional 12.8% occurred on Interstates, 11.4% on City Streets, and 5.1% on County Roads.
- Calculations show slightly less than half, or 48.5%, of the 2008 deer strike crashes occurred from October through December, with the largest proportion in November (23.6%). When discussing this with the Missouri Department of Conservation, they suggested the major cause of increased roadway crossings by deer during this period is mating season. The peak occurs about mid-November. In addition, deer hunting season also may cause an increase in roadway crossings. The slight increase in deer-involved crashes noted in the spring months may be attributed to yearling fawns dispersing from their mothers just prior to the arrival of newborns.
- The majority of deer strike crashes occurred from 5:00 p.m. through 6:59 a.m. This time period accounted for 83.5% of the total.
- Of the drivers striking deer, 60.1% were male and 39.9% were female. The average age of the driver was 40.7 years.
- Of the drivers striking deer, 85.5% had a Missouri driver's license, 14.1% had an out-of-state driver's license, and 0.3% were unlicensed at the time of the crash.

3. FINDINGS

The following is a series of tables and figures which characterize Missouri's 2008 deer strike traffic crash problem.

AREA CLASSIFICATION BY CRASH SEVERITY

	FATAL	%	PERSONAL INJURY	%	PROPERTY DAMAGE	%	TOTAL	%
URBAN	2	100.0	78	27.5	928	28.0	1,008	28.0
RURAL	0	0.0	206	72.5	2,389	72.0	2,595	72.0
TOTAL	2	100.0	284	100.0	3,317	100.0	3,603	100.0

TABLE 2

2008 MISSOURI DEER CRASHES

ROAD CURVATURE BY CRASH SEVERITY

	FATAL	%	PERSONAL INJURY	%	PROPERTY DAMAGE	%	TOTAL	%
STRAIGHT	1	50.0	248	88.6	2,383	87.6	2,632	87.6
CURVE	1	50.0	32	11.4	339	12.5	372	12.4
UNKNOWN	0	-	4	-	595	-	599	-
TOTAL	2	100.0	284	100.0	3,317	100.0	3,603	100.0

TABLE 3

2008 MISSOURI DEER CRASHES

ROAD INCLINE BY CRASH SEVERITY

	FATAL	0/0	PERSONAL INJURY	%	PROPERTY DAMAGE	0/0	TOTAL	%
LEVEL	1	50.0	158	56.2	1,695	62.6	1,854	61.9
HILL	1	50.0	112	39.9	924	34.1	1,037	34.7
CREST	0	0.0	11	3.9	91	3.4	102	3.4
UNKNOWN	0	-	3	-	607	-	610	-
TOTAL	2	100.0	284	100.0	3,317	100.0	3,603	100.0

TABLE 4

ROAD CONDITIONS BY CRASH SEVERITY

	FATAL	%	PERSONAL INJURY	%	PROPERTY DAMAGE	%	TOTAL	%
DRY	0	0.0	51	18.0	463	17.0	514	17.1
WET	2	100.0	228	80.6	2,235	81.9	2,465	81.8
ICE	0	0.0	3	1.1	19	0.7	22	0.7
MUD	0	0.0	1	0.4	12	0.4	13	0.4
UNKNOWN	0	-	1	-	588	-	589	-
TOTAL	2	100.0	284	100.0	3,317	100.0	3,603	100.0

TABLE 5

2008 MISSOURI DEER CRASHES

HIGHWAY CLASSIFICATION BY CRASH SEVERITY

F	ATAL	0/0	PERSONAL INJURY	%	PROPERTY DAMAGE	%	TOTAL	%
INTERSTATE	0	0.0	34	12.0	427	12.9	461	12.8
U.S. HIGHWAY	1	50.0	70	24.7	863	26.0	934	25.9
STATE NUMBERED	0	0.0	83	29.2	881	26.6	964	26.8
SINGLE STATE LETTERED	0	0.0	39	13.7	381	11.5	420	11.7
DOUBLE STATE LETTERED	0	0.0	15	5.3	157	4.7	172	4.8
OUTER ROAD	0	0.0	0	0.0	16	0.5	16	0.4
COUNTY ROAD	1	50.0	16	5.6	168	5.1	185	5.1
CITY STREET	0	0.0	24	8.5	386	11.6	410	11.4
INTERSTATE LOOP	0	0.0	0	0.0	7	0.2	7	0.2
OTHER ¹	0	0.0	3	1.1	31	0.9	34	0.9
TOTAL	2	100.0	284	100.0	3,317	100.0	3,603	100.0

¹"Other" includes types of roads that are maintained by the State as well as by local jurisdictions.

TABLE 6

MONTH OF YEAR

MONTH	FREQUENCY	PERCENT
JANUARY	222	6.2
FEBRUARY	168	4.7
MARCH	206	5.7
APRIL	203	5.6
MAY	289	8.0
JUNE	262	7.3
JULY	182	5.1
AUGUST	158	4.4
SEPTEMBER	167	4.6
OCTOBER	637	17.7
NOVEMBER	849	23.6
DECEMBER	260	7.2
TOTAL	3,603	100.0

TABLE 8

2008 MISSOURI DEER CRASHES

DAY OF WEEK

DAY	FREQUENCY	PERCENT
SUNDAY	513	14.2
MONDAY	497	13.8
TUESDAY	495	13.7
WEDNESDAY	493	13.7
THURSDAY	529	14.7
FRIDAY	567	15.7
SATURDAY	509	14.1
TOTAL	3,603	100.0

TABLE 9

HOUR OF DAY

HOUR	FREQUENCY	PERCENT
12:01A - 12:59A	122	3.4
01:00A - 01:59A	158	4.4
02:00A - 02:59A	79	2.2
03:00A - 03:59A	86	2.4
04:00A - 04:59A	100	2.8
05:00A - 05:59A	210	5.8
06:00A - 06:59A	293	8.2
07:00A - 07:59A	151	4.2
08:00A - 08:59A	65	1.8
09:00A - 09:59A	61	1.7
10:00A - 10:59A	44	1.2
11:00A - 11:59A	45	1.3
NOON - 12:59P	45	1.3
01:00P - 01:59P	37	1.0
02:00P - 02:59P	44	1.2
03:00P - 03:59P	36	1.0
04:00P - 04:59P	65	1.8
05:00P - 05:59P	219	6.1
06:00P - 06:59P	307	8.5
07:00P - 07:59P	359	10.0
08:00P - 08:59P	349	9.7
09:00P - 09:59P	317	8.8
10:00P - 10:59P	199	5.5
11:00P - MIDNIGHT	205	5.7
TOTAL	3,603	100.0

TABLE 10
Unknown Data Not Included

2008 MISSOURI DEER CRASHES¹

TYPE OF VEHICLE STRIKING DEER BY CRASH SEVERITY

	FATAL	%	PERSONAL INJURY	%	PROPERTY DAMAGE	0/0	TOTAL	%
AUTOMOBILE	0	0.0	141	49.5	1,764	53.2	1,905	52.9
SPORT UTILITY VEHICLE	0	0.0	23	8.1	604	18.2	627	17.4
LIMOUSINE	0	0.0	0	0.0	1	0.0	1	0.0
VAN	0	0.0	20	7.0	280	8.5	300	8.3
BUS	0	0.0	1	0.4	4	0.1	5	0.1
SCHOOL BUS	0	0.0	0	0.0	4	0.1	4	0.1
MOTORCYCLE	2	100.0	78	27.4	8	0.2	88	2.4
ALL TERRAIN VEHICLE	0	0.0	1	0.4	0	0.0	1	0.0
MOPED	0	0.0	1	0.4	0	0.0	1	0.0
OTHER TRANSPORT DEVICE	E 0	0.0	0	0.0	1	0.0	1	0.0
PICK-UP TRUCK	0	0.0	18	6.3	558	16.8	576	16.0
OTHER TRUCKS	0	0.0	2	0.7	90	2.7	92	2.6
UNKNOWN	0	-	0	-	3	-	3	-
TOTAL	2	100.0	285	100.0	3,317	100.0	3,604	100.0

¹This table includes only those vehicles striking a deer during the first harmful event in a crash.

TABLE 11

VEHICLES STRIKING DEER IN 2008 MISSOURI CRASHES¹

DRIVER INVOLVEMENT BY CRASH SEVERITY

	FATAL	%	PERSONAL INJURY	%	PROPERTY DAMAGE	%	TOTAL	%
DRIVERLESS	0	0.0	0	0.0	0	0.0	0	0.0
KNOWN DRIVER INVOLVED	2	100.0	283	99.3	3,314	99.9	3,599	99.9
UNKNOWN DRIVER INVOLVED	0	0.0	2	0.7	3	0.1	5	0.1
TOTAL	2	100.0	285	100.0	3,317	100.0	3,604	100.0

¹This table includes only vehicles striking deer during the first harmful event in a crash.

TABLE 12

DRIVERS OF VEHICLES STRIKING DEER IN 2008 MISSOURI CRASHES $^{\scriptscriptstyle 1}$

SEX OF DRIVER BY CRASH SEVERITY

	FATAL	%	PERSONAL INJURY	%	PROPERTY DAMAGE	%	TOTAL	%
MALE	2	100.0	177	62.5	1,713	59.8	1,892	60.1
FEMALE	0	0.0	106	37.5	1,151	40.2	1,257	39.9
UNKNOWN	0	-	2	-	453	-	455	-
TOTAL	2	100.0	285	100.0	3,317	100.0	3,604	100.0

¹The table includes only drivers of vehicles striking deer during the first harmful event in a crash.

TABLE 13

DRIVERS OF VEHICLES STRIKING DEER IN 2008 MISSOURI CRASHES¹

AGE OF DRIVER BY CRASH SEVERITY

	FATAL	%	PERSONAL INJURY	%	PROPERTY DAMAGE	%	TOTAL	%
AVERAGE AGE OF DRIVER	45.5	-	39.7	-	40.8	-	40.7	-
14 YEARS AND UNDER	. 0	00	0	0.0	0	0.0	0	0.0
15 - 20 YEARS	0	0.0	26	9.2	255	7.7	281	7.8
21 - 25 YEARS	0	0.0	36	12.7	401	12.1	437	12.2
26 - 30 YEARS	0	0.0	34	12.0	362	11.0	396	11.0
31 - 35 YEARS	1	50.0	30	10.6	321	9.7	352	9.8
36 - 40 YEARS	0	0.0	26	9.2	340	10.3	366	10.2
41 - 45 YEARS	0	0.0	35	12.4	333	10.1	368	10.3
46 - 50 YEARS	0	0.0	23	8.1	367	11.1	390	10.9
51 - 55 YEARS	0	0.0	31	11.0	331	10.0	362	10.1
56 - 60 YEARS	1	50.0	13	4.6	243	7.4	257	7.2
61 - 65 YEARS	0	0.0	13	4.6	180	5.4	193	5.4
66 YEARS AND OVER	0	0.0	16	5.7	173	5.2	189	5.3
UNKNOWN	0	-	2	-	11	-	13	-
TOTAL	2	100.0	285	100.0	3,317	100.0	3,604	100.0

¹This table includes only drivers of vehicles striking deer during the first harmful event in a crash.

TABLE 14

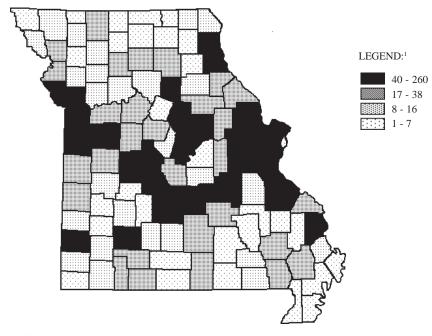
DRIVERS OF VEHICLES STRIKING DEER IN 2008 MISSOURI CRASHES¹ DRIVER'S LICENSE STATE AND TYPE BY CRASH SEVERITY

	FATAL	%	PERSONAL INJURY	%	PROPERTY DAMAGE	%	TOTAL	0/0
MISSOURI								
LEARNER'S PERMIT	0	0.0	1	0.4	2	0.1	3	0.1
OPERATOR'S LICENSE	2	100.0	206	73.3	2,104	77.8	2,312	77.4
MOTORCYCLE ONLY	0	0.0	0	0.0	0	0.0	0	0.0
COMMERCIAL DRIVER'S LICENSE	0	0.0	28	10.0	212	7.8	240	8.0
SUB-TOTAL	2	100.0	235	82.5	2,318	85.7	2,555	85.5
OUT STATE								
LEARNER'S PERMIT	0	0.0	0	0.0	0	0.0	0	0.0
OPERATOR'S LICENSE	0	0.0	39	13.9	326	12.1	365	12.2
MOTORCYCLE ONLY	0	0.0	0	0.0	0	0.0	0	0.0
COMMERCIAL DRIVER'S LICENSE	0	0.0	3	1.1	54	2.0	57	1.9
SUB-TOTAL	0	0.0	42	14.7	380	14.1	422	14.1
UNLICENSED	0	0.0	4	1.4	6	0.2	10	0.3
UNKNOWN	0	-	4	-	613	-	617	-
TOTAL	2	100.0	285	100.0	3,317	100.0	3,604	100.0

¹This table includes only drivers of vehicles striking deer during the first harmful event in a crash.

TABLE 15

COUNTY QUARTILE ANALYSIS



 $^{\scriptscriptstyle 1}\text{LEGEND}$ CATEGORIES ARE BASED ON QUARTILES OF COUNTIES.

RANK	COUNTY	FREQUENCY	PERCENT	RANK	COUNTY	FREQUENCY	PERCENT
1.0	JACKSON	260	7.2	21.0	STE. GENEVIEVE	45	1.2
2.0	ST. LOUIS	199	5.5	23.0	LEWIS	44	1.2
3.0	PLATTE	189	5.2	24.5	CRAWFORD	42	1.2
4.0	CLAY	168	4.7	24.5	MARION	42	1.2
5.0	JEFFERSON	158	4.4	26.5	COLE	41	1.1
6.0	BOONE	127	3.5	26.5	JASPER	41	1.1
7.0	ST. CHARLES	111	3.1	28.5	GREENE	40	1.1
8.0	FRANKLIN	110	3.1	28.5	MORGAN	40	1.1
9.0	JOHNSON	94	2.6				First Quartile
10.0	LINCOLN	92	2.6				
10.0							
11.0	PHELPS	79	2.2				Second Quartile
	PHELPS CASS	79 73	2.2 2.0	30.0	HOWELL	38	Second Quartile 1.1
11.0				30.0 31.0	HOWELL PETTIS	38 36	-
11.0 12.0	CASS	73 68	2.0				1.1
11.0 12.0 13.0	CASS CALLAWAY	73 68	2.0 1.9	31.0	PETTIS	36	1.1 1.0
11.0 12.0 13.0 14.0	CASS CALLAWAY CAPE GIRARDEAU	73 68 55	2.0 1.9 1.5	31.0 32.0	PETTIS TEXAS	36 34	1.1 1.0 0.9
11.0 12.0 13.0 14.0 15.0	CASS CALLAWAY CAPE GIRARDEAU CAMDEN	73 68 55 53	2.0 1.9 1.5 1.5	31.0 32.0 33.0	PETTIS TEXAS BUCHANAN	36 34 33	1.1 1.0 0.9 0.9
11.0 12.0 13.0 14.0 15.0 16.5	CASS CALLAWAY CAPE GIRARDEAU CAMDEN PULASKI	73 68 55 53 52	2.0 1.9 1.5 1.5	31.0 32.0 33.0 34.0	PETTIS TEXAS BUCHANAN COOPER	36 34 33 32	1.1 1.0 0.9 0.9 0.9
11.0 12.0 13.0 14.0 15.0 16.5	CASS CALLAWAY CAPE GIRARDEAU CAMDEN PULASKI RANDOLPH	73 68 55 53 52 52	2.0 1.9 1.5 1.5 1.4 1.4	31.0 32.0 33.0 34.0 35.0	PETTIS TEXAS BUCHANAN COOPER MILLER	36 34 33 32 31	1.1 1.0 0.9 0.9 0.9 0.9
11.0 12.0 13.0 14.0 15.0 16.5 16.5	CASS CALLAWAY CAPE GIRARDEAU CAMDEN PULASKI RANDOLPH ST. FRANCOIS	73 68 55 53 52 52 47	2.0 1.9 1.5 1.5 1.4 1.4	31.0 32.0 33.0 34.0 35.0 36.0	PETTIS TEXAS BUCHANAN COOPER MILLER DENT	36 34 33 32 31 30	1.1 1.0 0.9 0.9 0.9 0.9 0.9

RANK	COUNTY	FREQUENCY	PERCENT	RANK	COUNTY	FREQUENCY	PERCENT
40.0	PERRY	25	0.7	77.0	SCOTT	10	0.3
41.5	CHRISTIAN	24	0.7	80.0	CALDWELL	9	0.2
41.5	SALINE	24	0.7	80.0	CLINTON	9	0.2
44.5	HENRY	22	0.6	80.0	ST. CLAIR	9	0.2
44.5	MACON	22	0.6	83.0	BARTON	8	0.2
44.5	TANEY	22	0.6	83.0	DAVIESS	8	0.2
44.5	WAYNE	22	0.6	83.0	RIPLEY	8	0.2
48.0	BUTLER	21	0.6			Th	ird Quartile
48.0	HARRISON	21	0.6	— — — -			
48.0	STODDARD	21	0.6				rth Quartile
50.0	PIKE	20	0.6	88.0	ADAIR	7	0.2
51.0	AUDRAIN	19	0.5	88.0	ATCHISON	7	0.2
53.5	ANDREW	18	0.5	88.0	DE KALB	7	0.2
53.5	LIVINGSTON	18	0.5	88.0	HOWARD	7	0.2
53.5	STONE	18	0.5	88.0	MC DONALD	7	0.2
53.5	VERNON	18	0.5	88.0	OREGON	7	0.2
57.0	BATES	17	0.5	88.0	SHANNON	7	0.2
57.0	LINN	17	0.5	93.0	MADISON	6	0.2
57.0	RALLS	17	0.5	93.0	OSAGE	6	0.2
		Seco	ond Quartile	93.0	PEMISCOT	6	0.2
				97.5	DALLAS	5	0.1
			ird Quartile	97.5	DOUGLAS	5	0.1
59.5	LAWRENCE	16	0.4	97.5	DUNKLIN	5	0.1
59.5	WASHINGTON	16	0.4	97.5	GRUNDY	5	0.1
62.5	GENTRY	15	0.4	97.5	NEW MADRID	5	0.1
62.5	MONITEAU	15	0.4	97.5	WORTH	5	0.1
62.5	NODAWAY	15	0.4	101.5	SHELBY	4	0.1
62.5	POLK	15	0.4	101.5	SULLIVAN	4	0.1
66.0	RAY	14	0.4	105.0	BOLLINGER	3	0.1
66.0	SCOTLAND	14	0.4	105.0	CEDAR	3	0.1
66.0	WRIGHT	14	0.4	105.0	MISSISSIPPI	3	0.1
68.5	MONROE	13	0.4	105.0	REYNOLDS	3	0.1
68.5	WEBSTER	13	0.4	105.0	ST. LOUIS CITY	3	0.1
70.5	HOLT	12	0.3	110.0	HICKORY	2	0.1
70.5	MARIES	12	0.3	110.0	IRON	2	0.1
73.5	CARROLL	11	0.3	110.0	KNOX	2	0.1
73.5	CARTER	11	0.3	110.0	OZARK	2	0.1
73.5	CLARK	11	0.3	110.0	PUTNAM	2	0.1
73.5	NEWTON	11	0.3	114.0	DADE	1	0.0
77.0	BARRY	10	0.3	114.0	MERCER	1	0.0
77.0	CHARITON	10	0.3	114.0	SCHUYLER	1	0.0
				'			

TABLE 16

CITY LISTING

RANK	CITY	FREQUENCY	PERCENT ¹
1.0	KANSAS CITY	266	20.7
2.0	LEE'S SUMMIT	60	4.7
3.0	COLUMBIA	42	3.3
4.0	OSAGE BEACH	33	2.6
5.0	JEFFERSON CITY	27	2.1
6.0	CAPE GIRARDEAU	26	2.0
7.0	INDEPENDENCE	25	1.9
8.5	CHESTERFIELD	24	1.9
8.5	PARKVILLE	24	1.9
10.0	MOBERLY	23	1.8
11.5	SPRINGFIELD	20	1.6
11.5	WILDWOOD	20	1.6
13.5	BLUE SPRINGS	19	1.5
13.5	WARRENSBURG	19	1.5
15.5	FULTON	17	1.3
15.5	ST. JOSEPH	17	1.3
17.0	SUNSET HILLS	16	1.2
18.5	HANNIBAL	15	1.2
18.5	LIBERTY	15	1.2
21.0	JACKSON	14	1.1
21.0	LAKE OZARK	14	1.1
21.0	ROLLA	14	1.1
23.5	ELLISVILLE	13	1.0
23.5	JOPLIN	13	1.0
27.0	ARNOLD	12	0.9
27.0	HERCULANEUM	12	0.9
27.0	ST. PETERS	12	0.9
27.0	WAYNESVILLE	12	0.9
27.0	WENTZVILLE	12	0.9
31.0	HARRISONVILLE	11	0.9
31.0	RIVERSIDE	11	0.9
31.0	ST. ROBERT	11	0.9
35.0	BOONVILLE	10	0.8
35.0	GRANDVIEW	10	0.8
35.0	O'FALLON	10	0.8
35.0	TROY	10	0.8
35.0	WARRENTON	10	0.8
39.0	MARYLAND HEIGHTS	9	0.7
39.0	PEVELY	9	0.7
39.0	PLATTECITY	9	0.7
42.5	BELTON	8	0.6
42.5	NIXA	8	0.6
42.5	TOWN AND COUNTRY	8	0.6
42.5	WASHINGTON	8	0.6
48.0	BALLWIN	7	0.5
48.0	BRANSON	7	0.5
48.0	BRIDGETON	7	0.5
48.0	CREVE COEUR	7	0.5
48.0	GLADSTONE	7	0.5
48.0	NORTH KANSAS CITY	7	0.5
48.0	WESTON	7	0.5
54.0	EUREKA	6	0.5
54.0	HOLLISTER	6	0.5
54.0	KIRKWOOD	6	0.5
54.0	LAKE ST. LOUIS	6	0.5
54.0	POPLAR BLUFF	6	0.5

 $^{^{1}}$ Percentage is based on deer involved crashes which occurred in Missouri municipalities with populations of 1,000 or more. Only those municipalities comprising 0.5% or more of these crashes are listed.

TABLE 17